

① b)  $H_0$ : there is no assoc. btw. termination and age.

$H_a$ : there is an assoc. .... " " "

$\chi^2$ -test  
obs - A  
exp - B

$$\chi^2 = \sum \frac{(\text{obs} - \text{exp})^2}{\text{exp}} = \frac{(7 - 18.624)^2}{18.624} + \frac{(41 - 29.376)^2}{29.376} \dots = 12.303$$

$$P(\chi^2 \geq 12.303 \mid \underline{df=1}) = 4.52 \times 10^{-4}$$

We reject  $H_0$  in favor of  $H_a$  b/c p-value of  $4.52 \times 10^{-4} < \alpha = 0.05$ . We have suff. evid. that there is an assoc. btw. age & termination.

⑦ a) with letter, 51.2% responded  
without, 52.6%

b)  $H_0$ : letter sent + response are independent.

$H_a$ : letter sent + response are dependent.

$$\chi^2 = 1.914 \quad df = 1$$

$$P\text{-val} = 0.167$$

- fail to reject

- recopy  $H_0$

⑨ a) study - no treatment imposed.

c)  $H_0$ : patient status + pet ownership are independent.

$H_a$ : " " " " are dependent

d)  $\chi^2 = 8.851$   $df = 1$   $P\text{-val} = 0.003$

e) - reject  $H_0$   
- recopy  $H_a$

3)	<u>Assump</u>	<u>Check</u>
	1- 2 independent SRS	1- circled and assumed
	2- sample size large enough so all expected counts are > 5.	2- all expected counts > 5 ✓

Ho: Gender and Super Bowl Bid response are independent

Ha: Gender and Super Bowl Bid response are dependent

$$\chi^2 = \sum \frac{(\text{obs} - \text{exp})^2}{\text{exp}} = \frac{(32 - 35.34)^2}{35.34} + \frac{(25 - 21.66)^2}{21.66} + \dots = 1.932$$

$$P(\chi^2 > 1.932 | df=1) = 0.165$$

$\chi^2$  test

We fail to reject Ho because p-value of 0.165 is > alpha of 0.05.

We have sufficient evidence that gender and Super Bowl Bid response are independent.

4)	<u>Assump</u>	<u>Check</u>
	1- SRS	1- circled
	2- sample size large enough so all expected counts are >5.	2- all expected counts >5 FAILS!

Ho: The observed frequency distribution of where AP students choose to go to college fits the expected distribution

Ha: The observed frequency distribution of where AP students choose to go to college does not fit the expected distribution

$$\chi^2 = \sum \frac{(\text{obs} - \text{exp})^2}{\text{exp}} = \frac{(85 - 75.25)^2}{75.25} + \frac{(40 - 43)^2}{43} + \dots = 5.885$$

$$P(\chi^2 > 5.885 | df = 8) = 0.66011$$

We fail to reject Ho because p-value of 0.66011 is > alpha of 0.05.

We have sufficient evidence that the observed frequency distribution of where AP students choose to go to college ~~does not~~ fit the expected

